IC695CPE330-AAAD RX3i 1GHz 64MB CPU w/Ethernet

The PACSystems* RX3i RX3i CPE330 is a richly featured programmable controller CPU equipped with a 1GHz dual-core microprocessor, 64Mbytes of built-in program memory and two independent high-speed Ethernet interfaces. It is ideally suited for multi-tier communications and for synchronizing large amounts of data. Its metal housing provides superior noise immunity.

The CPE330 is programmed and configured over Ethernet via GE's Proficy Machine Edition (PME) software. It resides in the RX3i main rack and supports all RX3i I/O and Intelligent Option modules, up to 32K I/O points.

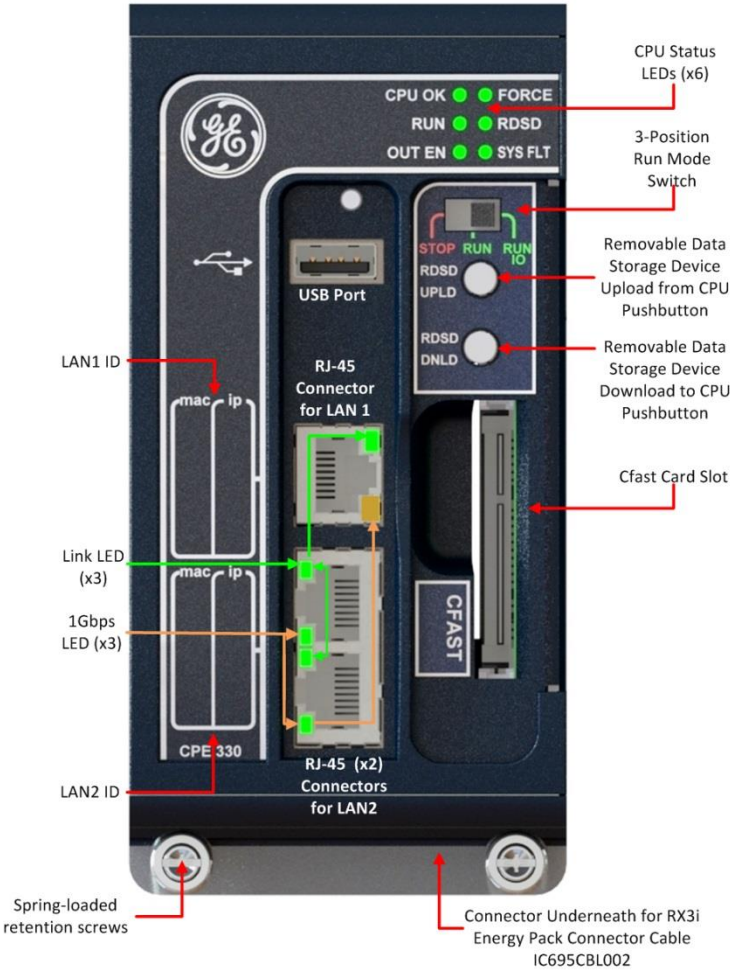

Figure 1: CPE330 Features at a Glance

CPU Features:

- Contains 64Mbytes of user memory.
- Optional Energy Pack, IC695ACC402, allows the CPU to save user memory to non-volatile storage in the event of loss of power.
- Ability to transfer user programs and/or data to and from USB 2.0 A type Removable Data Storage Devices (RDSDs).
- Two independent 10/100/1000 Ethernet LANs. LAN1 attaches via the dedicated (upper) RJ-45 connector shown in Figure 1. LAN2 attaches via the lower pair of internally-switched RJ-45 connectors.
- Ethernet Global Data (EGD) Class 1 supported on both LANs.
- The embedded Ethernet interface is supported by a dedicated microprocessor core. This dedicated processing capability permits the CPU to support these two LANs with:
    - up to 48 simultaneous SRTP Server connections,
    - up to 16 simultaneous Modbus/TCP Server connections.
    - 32 Clients are permitted; each may be SRTP or Modbus/TCP.
- OPC UA Server with support for up to 5 sessions, 7 subscriptions per session, and up to 12,500 variables.
- User may program in Ladder Diagram, Structured Text, Function Block Diagram, or C. Refer to *PACSystems RX7i & RX3i CPU Programmer's Reference Manual, GFK-2950.*
- Configurable data and program memory.
- Supports auto-located Symbolic Variables that can use any amount of user memory.
- Reference table sizes include 32k bits for discrete %I and %Q and up to 32k words each for analog %AI and %AQ. Bulk memory (%W), up to max user memory, is also supported for data exchanges.
- Supports up to 512 program blocks. Maximum size for a block is 128KB.
- For supported I/O, Communications, Motion, and Intelligent modules, refer to the *PACSystems RX3i System Manual*, GFK-2314.
- Ability to display serial number and date code in PME *Device Information Details*.

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Current Release Information

Catalog Number	Date	Firmware Version (Build Number)								Comment
		Field Upgradeable						Not Field Upgradeable		
		Primary	OS Loader	BOC	FPGA Primary	µController Primary	ACC402 EP Base	µController Boot	BIOS	
IC695CPE330-AAAD	Aug 2015	8.60 (E55G)	1.02 (E4OC)	1.19 (43A1)	1.171 (16A14)	1.6 (n/a)	2.20 (n/a)	1.2 (n/a)	0ACEE007 19-Mar-15	Feature Enhancements

Upgrade Strategy: Firmware version 8.60 is being released as a field upgrade kit only.

Firmware version 8.60 adds support for Ethernet Global Data (EGD) and for the advanced Ethernet configuration parameters necessary for EGD support, as documented in *New Features and Enhancements*.

All versions of the CPE330 are field upgradeable to this firmware release using the upgrade kit listed below. The upgrade is available via download from the GEIP support website http://support.ge-ip.com. Product download number is DN4340.

The firmware upgrade process may take up to four minutes to complete depending on the contents of the update. During the update, the RUN and OUTPUTS ENABLED LEDs blink GREEN and the CPE330 may automatically reset one or more times. All LEDs will be off during the automatic resets. The IC695ACC402 Energy Pack (if present) may also be updated. The energy pack blinks all LEDs GREEN and performs an automatic reset following its update.

Do not manually power cycle the CPE330 or remove the Cap Pack from the Energy Pack base (if present) during the updates as this may place the CPU in an unrecoverable and unusable state.

Upgrade Kit: 41G2016-FW01-000-A3

Release History

Catalog Number	Bundled w/ACC402 Energy Pack	Date	Firmware Version (Build Number)							
			Field Upgradeable						Not Field Upgradeable	
			Primary	OS Loader	BOC	FPGA Primary	µController Primary	ACC402 EP Base	µController Boot	BIOS
IC695CPE330-AAAC		June 2015	8.55 (E4YL)	1.02 (E4OC)	1.19 (43A1)	1.171 (16A14)	1.6 (n/a)	2.20 (n/a)	1.2 (n/a)	0ACEE007 19-Mar-15
IC695CPE330-AAAB		May 2015	8.50 (E4V9)	1.02 (E4OC)	1.19 (43A1)	1.171 (16A14)	1.6 (n/a)	2.20 (n/a)	1.2 (n/a)	0ACEE007 19-Mar-15
IC695CPE330-AAAA	IC695CPK330	Mar 2015	8.45 (E4P6)	1.02 (E4OC)	1.19 (43A1)	1.110 (11A12)	1.5 (n/a)	2.19 (n/a)	1.2 (n/a)	0ACEE007 19-Mar-15

Functional Compatibility

Subject *Description*

	Feature	Minimum Version of PME Required
Programmer Version Requirements	CPE330 EGD Configuration – LAN2 Advanced Ethernet Configuration Parameters – LAN1 & LAN2	Proficy™ Machine Edition Logic Developer PLC 8.60 SIM 5 or later is required for configuration of EGD on CPE330 LAN2. This version is also required for advanced Ethernet configuration parameter support on both LAN1 and LAN2.
	CPE330 EGD Configuration – LAN1	Proficy™ Machine Edition Logic Developer PLC 8.60 or later is required for configuration of EGD on CPE330 LAN1. This version (without SIM5) does not support EGD on CPE330 LAN2 or advanced Ethernet configuration parameters for EGD.
	CPE330 Configuration	Proficy™ Machine Edition Logic Developer PLC 8.60 or later is required for native configuration support of the CPE330 and its embedded Ethernet ports.
	CPU315 & CPU320 Compatible Configuration	If the embedded Ethernet ports are not needed, older versions of Proficy Machine Edition may be used to download a CPU320 configuration to the CPE330. CPU315 configurations must first be migrated to CPU320, then downloaded to CPE330.

RX3i IO Module Firmware Upgrade

File Name	Module	Version
41G1485-MS10-000-A2.zip	ALG222	1.60
41G1485-MS10-002-A1.zip	ALG223	1.60
41G1485-MS10-001-A2.zip	ALG232	1.60
41G1485-MS10-003-A1.zip	ALG233	1.60
82A1190-MS10-000-A2.zip	ALG306	1.02
82A1191-MS10-000-A2.zip	ALG312	1.02
41G1289-MS10-000-A2.zip	ALG392	1.61
82A1726-MS10-000-A1.zip	ALG412	1.02
41G1486-MS10-000-A2.zip	ALG442	1.61
41G1486-MS10-001-A2.zip	ALG542	1.61
44A753049-G03.zip	ALG600	1.14
44A753281-G01.zip	ALG704	1.08
44A753282-G01.zip	ALG708	1.08
44A753283-G01.zip	ALG728	1.01
41G1606-MS10-000-A2.zip	APU300	1.10
44A753277-G06.zip	CMM002	1.34
44A753278-G06.zip	CMM004	1.34
82A1512-MS10-000-A4.zip	CMX128	1.07
82A1844-MS10-000-A0.zip	CMX128	2.00
41G1836-MS10-001-A0.zip	ECM850	1.00
41G2060-MS10-000-A1.zip	EDS001	6.30
41G2076-MS10-000-A1.zip	EIS001	6.30
44A753032-G16.zip	ETM001	6.30
44A753029-G01.zip	MDL660	1.10
41G1522-MS10-000-A0.zip	MDL664	1.00
41G1522-MS10-000-A1.zip	MDL664	1.01
44A753028-G02.zip	MDL754	1.20
41G1520-MS10-000-A0.zip	MDL765	1.00
41G1520-MS10-000-A1.zip	MDL765	1.01
44A73033-G02.zip	PBM300	1.04
41G1444-MS10-000-A6.zip	PMM335	1.61
82A1790-MS10-000-A9.zip	PNC001	2.11
82A1790-MS10-000-B0.zip	PNC001	2.20
82A1729-MS10-000-A1.zip	PRS015	1.04
82A1558-MS10-000-A4.zip	RMX128	1.07
82A1845-MS10-000-A0.zip	RMX128	2.00
41G1930-MS10-000-A0.zip	RMX228	2.00

Notes

The CPE330 IO Module Firmware Upgrade procedure is transacted over Ethernet using a web browser and contains enhanced security features. Instructions for this procedure are included in the CPE330 upgrade kit documentation.

The upgrade files listed here contain the necessary security features to allow them to work with the new enhanced security procedure.

Older versions may not contain the necessary security features to allow them to work with the new enhanced security procedure. Should you need to use an older version upgrade kit which is incompatible, contact GE for assistance at http://www.geautomation.com/how-can-we-help-you.

All future IO module firmware upgrade kits will be compatible with the new security feature.

Subject	Description
HART® Pass Through	HART Pass Through entails usage of PC-based applications, RX3i Analog modules with HART functionality and (optionally) supporting PROFINET products. HART Pass Through operation is described in the *PACSystems HART Pass Through User Manual*, GFK-2929.
USB	CPE330 is compatible with USB 1.1 and USB 2.0 devices.
CFast	Cfast slot is not enabled in this release.
RX3i Backplane Hardware Revision Compatibility	The following backplane hardware revisions MUST be used: IC695CHS012-BAMP IC695CHS016-BAMP IC695CHS012CA-BAMP IC695CHS016CA-BAMP or IC695CHS007-AA (or later) IC695CHS012-CA (or later) IC695CHS016-CA (or later) IC695CHS012CA-CA (or later) IC695CHS016CA-CA (or later)
Series 90-30 Module Compatibility	The following Series 90-30 modules are supported by the PACSystems RX3i: **Discrete Input Modules:** IC693ACC300, IC693MDL230/231/240/241/250/260/632/634/635/645/646/648/654/655/660[1] **Discrete Output Modules:** IC693MDL310/330/340/350/390/730/731/732/733/734/740/741/742/748/752/753/754/758/760/916/930/931/940 **Discrete Combinational:** IC693MAR590, IC693MDR390 **Analog I/O Modules:** IC693ALG220/221/222/223/390/391/392/442 **High Speed Counter:** IC693APU300 **FANUC I/O Link:** IC693BEM320, IC693BEM321 **Motion Control:** IC693DSM314, IC693DSM324 **GENIUS:** IC693BEM331 **Device Net Master:** IC693DNM200 **Serial IO Processor:** IC693APU305 **Temperature Control:** IC693TCM302, IC693TCM303 **Power Transducer:** IC693PTM100, IC693PTM101 No other Series 90-30 modules are supported.
IC694 (blue) Module Compatibility	CPE330 supports all IC694* modules.[1,2]
IC695 (PCI) Module Compatibility	CPE330 supports all IC695* modules.
Series 90-30 Main Rack Compatibility	Series 90-30 Main Racks cannot be used in a PACSystems RX3i system. Series 90-30 CPUs do not operate in PACSystems RX3i Racks.
Isolated 24Vdc power	In applications that use the IC69xALG220/221/222, consult *PACSystems RX3i System Manual*, GFK-2314 for details of wiring the 24Vdc power.
Recommended IC200ALG240 revision	When a VersaMax™ system Genius® Network Interface Unit (IC200GBI001) interoperates with a Genius Bus Controller located in a PACSystems PLC, and the VersaMax system contains an IC200ALG240 Analog Input Module, it is recommended that the IC200ALG240 firmware be updated to Revision 1.20 or later. Use firmware update kit 44A752313-G02, available here: http://support.ge-ip.com/support/index?page=docchannel&id=DO506.

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[1] IC693MDL660/IC694MDL660 firmware must be updated to version 1.10

[2] IC694MDL754 firmware must be updated to version 1.10

Subject	*Description*
Configuration of IC694MDL754	Always configure sixteen bits of module status when using this module. Configuring zero bits of module status will result in invalid data in the ESCP status bits of the module.
IC695CPE330 AC Power Supply Compatibility	For new installations using AC power supplies, the CPE330 requires an IC695PSA040H or IC695PSA140D (or higher) revision power supply to ensure compatibility. For retrofit installations using AC power supplies, the CPE330 may require an IC695PSA040H or IC695PSA140D (or higher) revision power supply depending on the total current load in the backplane. If the total current load exceeds the minimum current threshold of the existing power supply, no power supply change is required.
CPU315 & CPU320 Configuration Compatibility	The CPE330 may be interchanged with a corresponding CPU320 with no upgrade to Proficy Machine Edition (PME) software. Logic and configuration equality in PME are maintained when storing the same project to either a CPU320 or a CPE330. Migration of CPU315 applications to the CPE330 is possible with no upgrade to PME by converting them to a CPU320 application and storing the project to the CPE330. Versions of PME with native CPE330 support allow either a CPU320 or a CPE330 configuration to be stored to the CPE330. When a CPE330 is configured as a CPU320, Ethernet properties cannot be configured however, the embedded Ethernet ports may be used with the default IP Addresses.
Migration of CPU315 & CPU320 Serial Applications to CPE330	Applications using the embedded serial ports of the CPU315 or CPU320 should move serial functionality to the IC695CMM002 or IC695CMM004 Serial Communication Modules when migrating to the CPE330 since it does not have embedded serial ports.
Ethernet AUP File Support	The CPE330 does not support Advanced User Parameter (AUP) files for its Embedded Ethernet interfaces. AUP files are supported for external IC695ETM001 Ethernet modules.
Service Request 56 & 57 *Logic Driven Read/Write to Flash* Support	The IC695ACC402 Energy Pack automatically saves all user memory to flash when the CPE330 is powered off, and restores it to RAM when the CPE330 is powered on. Consequently, the CPE330 does not support Service Requests 56 & 57 *Logic Driven Read/Write to Flash*. The ENO output of the function block returns no power flow if these service requests are executed. When migrating a CPU320 application that uses Service Requests 56 & 57 to a CPE330, the IC695ACC402 Energy Pack needs to be attached.
Supported Browsers for CPE330 Firmware Update	The CPE330 supports secure firmware update over Ethernet using a web browser. Supported browsers are listed below along with the minimum required version: • Firefox: 31.0 • Chrome: 36.0.1985.143 m • Internet Explorer: 8.0.7601.17514 • Opera: 23.0.1522.75 • Safari: 7.0.5
CIMPLICITY OPC UA Client	When using CIMPLICITY OPC UA Client with the CPE330, ensure the total number of subscriptions does not exceed the maximum number of subscriptions per session supported by the CPE330. (The CPE330 supports up to 5 sessions, 7 subscriptions per session, and up to 12,500 variables.) CIMPLICITY OPC UA Client is configured to create one subscription for every 500 items by default. If, for example, a project contains 1000 monitored items, CIMPLICITY will create two subscriptions. The number of items per subscription may be modified from the Device Configuration Panel / OPC UA DA Configuration / Subscriptions / Max. Number of Monitored Items.

Subject	Description
CPE330 vs CPU320 Power Requirements	When migrating a CPU320 application to a CPE330, the power consumption must be recalculated to ensure adequate power is available in the new system. The maximum power consumption of a CPE330 is 18W whereas the maximum consumption a CPU320 is 9.3W. Depending on the total power available in the CPU320 system, it is possible that additional RX3i power supplies will be required. Users may view the combined power consumption of an RX3i rack in PME by right-clicking the power supply whose icon has a power usage indicator and selecting properties. **CPE330 Power Requirements** / **CPU320 Power Requirements** **+3.3 Vdc:** 0.0 A / 1.0 A **+5.0 Vdc:** 0.0 A / 1.2 A **+24 Vdc Relay:** 0.625 A without Energy Pack / 0.0 A 0.750 A with IC695ACC402 Energy Pack
PACSystems Energy Pack Compatibility	**The only energy pack compatible with the IC695CPE330 is the IC695ACC402.** The CPE330 is not compatible with the ICRXIACCEPK01 RXi Controller Energy Pack or the IC695ACC400 CPE305/310 Energy Pack. ▪ It is not physically possible to connect the CPE330 and the IC695ACC400 CPE305/310 Energy Pack together. ▪ However, it is possible to connect the CPE330 and the ICRXIACCEPK01 RXi Controller Energy Pack. Connecting the CPE330 to the RXi Energy Pack is not harmful. However, if power is applied, the CPE330 will continuously reset and not power up. Should this occur, turn the CPE330 off and disconnect the RXi Energy Pack. ▪ It is possible to connect the ICRXIACCCPK01A RXi Capacitor Pack to the IC695ACC402 Energy Pack Base. If this occurs, the capacitor pack may take longer to charge and a battery fault may be logged. Do not use the CPK01A RXi Capacitor Pack with the ACC402 Energy Pack Base. ▪ It is also physically possible to connect the IC695ACC402 CPE330 Energy Pack and IC695ACC412 Capacitor Pack to an ICRXICTL000 controller. If this occurs no errors are logged. However the capacitors will reach their end-of-life threshold faster than the RXi Capacitor Pack ICRXIACCCPK01. Do not use the CPE330 Energy Pack or Capacitor Pack with the RXi Controller.
Ethernet Station Manager Compatibility	Ethernet Station Manager utility Version 1.3 Build 2 or later is recommended for use with the CPE330. Earlier versions are compatible; however they may not display all CPE330 Ethernet parameters after issuing a *parm all* command. Should this issue occur, pressing *enter*, or issuing another command will cause the station manager to display the remaining parameters.

Problems Resolved by this Revision

None.

New Features and Enhancements

- **Ethernet Global Data (EGD) Class 1:** Ethernet Global Data is data that is automatically sent from one Ethernet device to one or more others. Once Ethernet Global Data has been configured, the data is sent automatically during system operation. No program interaction is necessary to produce or consume the global data. The CPE330 supports production and consumption of unicast, multicast, and broadcast EGD exchanges on both the LAN1 and LAN2 embedded Ethernet interfaces. Refer to GFK-2224P for a description of EGD Class 1.
- **Advanced Ethernet Configuration Parameters:** Advanced Ethernet configuration parameters for Ethernet Global Data applications may be selected directly in the CPE330 LAN1 and LAN2 Ethernet configuration tabs in Proficy Machine Edition.

  Previously, all RX3i Ethernet products required download of an AUP configuration file to set EGD advanced parameters. The AUP file is not necessary (and is not supported) on the CPE330. Instead, use the PME configuration tabs provided. See GFK-2224P for details of Advanced User Parameters configuration.

  Refer to *Functional Compatibility* above for details of PME support.

Restrictions and Open Issues

Subject	ID code	Description
Firmware Update Login Timeout	DE196 DE205 DE2626	The CPE330 enforces a two minute login activity timeout on the *Firmware Update* web page. Selecting an update package on the *Firmware Update* page and pressing the *Upload File* button after the timer expires initiates a firmware update. However, instead of displaying the firmware update status, one of these scenarios may occur: • Another login page is presented. After entering the user name and password the update status is displayed. • The web browser loses connection with the CPE330 and is unable to display update status because the CPU is automatically resetting while applying the firmware update. After the reset completes, pressing the refresh button in the browser shows the installed firmware version. These timeout issues may be avoided by having the firmware file ready so that the firmware update can be initiated immediately after logging in.
Running applications with fatal faults from flash	DE86	If an application that generates a fatal fault (such as a watchdog timeout) is stored to flash, the controller is configured to power-up from flash and go to RUN, and the RUN/STOP switch is disabled, the application may become stuck in an endless loop. (Power-up from flash, go to RUN, watchdog timeout, repeat.) Return the CPE330 to the factory if this condition is encountered. It is recommended that users thoroughly test their application before writing it to flash.
Clear All clears PLC_BAT and masks Energy Pack failures	DE715	A Clear All operation clears the values of all %S bits. After this operation the PLC_BAT status bit value may not reflect the actual status of the Energy Pack. For example, an Energy Pack in a failed state prior to the Clear All operation will remain in the failed state after the Clear All. Nonetheless, the PLC_BAT bit will indicate a good state as a result of the Clear All operation. Remove the Cap Pack and reinstall it in order to reassert the PLC_BAT status bit.
Using OEM Passwords with Enhanced Security Disabled	DE755	Single character OEM passwords are not supported when enhanced security is disabled.

Subject	ID code	Description
PME cannot display reference tables with Enhanced Security Enabled and OEM Locked	DE781	When Enhanced Security is enabled and OEM protection is engaged, only reference areas specified within the Access Control List can be viewed by a programmer, or HMI, regardless of privilege level. For example, if viewing %R memory from words 1 to 400 then the Access Control List must include read access to %R words 1 to 400. A custom reference view table with smaller reference sizes may also be used.
Controller Communication Window Timer settings below 10 ms are ignored	DE845	Normal sweep allows the configuration of the Controller Communications Window Timer for Limited operation and a time range from 0 to 255 ms (default 10 ms). However, the system is currently ignoring settings in the 0 to 9 ms range which results in an effective window time of 10 ms for this configuration range. This means a sweep impact of up to 10 ms may occur for some complex Controller Communication Window operations. If this operation is undesired then it is recommended to use a different sweep mode such as Constant Sweep or Constant Window.
Selecting Variable Publish State = Internal causes variable to be published in Address Space	DE1330	PME allows users to select a Variables Publish State to Internal. In some cases, this will cause the variable to be published to the OPC-UA address space. The manual states users should select *External Read/Write* or *External Read-Only* to publish to the address space. This is the recommended approach.
OPC-UA Server Restart Fails to complete	DE1326	The OPC-UA server may fail to restart after a large number (~200) of restart sequences are attempted without an intervening power cycle. A restart sequence will occur with the following operations: Run Mode or Stop Mode Store when published variables change and OPCUA server is running. Whenever this occurs, the *server restart bit* will stay on indefinitely. The issue is contained to OPC-UA server operation only. Power cycling the controller is the only way to address the issue.
CPE330 Firmware Update and IE 11.0	DE2038	CPE330 firmware may be updated using Internet Explorer 11. In rare instances, however, it is possible that the web page may not show firmware update status. If this occurs, wait until the CPE330 OK LED is on solid green indicating that the firmware update is complete, then click refresh button in IE. The web page should refresh and show the new firmware version.
Abrupt Power-down Fault	DE2256	An *Abrupt power-down detected at power-up* fault is recorded in the CPE330 PLC Fault Table if both the *Logic/Configuration Power-up Source* and *Data Power-up Source* in the hardware configuration are set to *Always Flash* or *Conditional Flash* and the CPE330 is turned off without an energy pack connected. This fault indicates that user memory was not preserved across the power cycle and does not interfere with normal operation because the application is already configured to power up from flash if there is no energy pack connected.
Power Supply Loss of Module Fault After Configuration Download	DE2257 CR-6257	A *Loss of, or missing option module* fault may appear for any RX3i power supply configured in the main rack whenever a hardware configuration download is performed after a BOC update occurs. (A BOC update occurs during a firmware update when switching between different CPU models in a single backlpane and also the first time a particular CPU model is placed in a backplane. BOC updates are indicated by the RUN and Output Enabled LEDs blinking in unison briefly during power up.) This issue does not affect normal operation and may be cleared by power cycling the CPU.

Subject	ID code	Description
Missing *Addition of IOC* event, when ECM850 module restarts due to reason like reset push-button and SVC_REQ 24	DE1248	When ECM850 module RESET is triggered using SVC_REQ 24 or via Reset pushbutton, PLC CPU do not report *Addition of IOC* fault message in Controller fault table, after successful reset of module.
Blink Code 1-2-1-8 After Power On	DE2017	Rarely, after powering on, the CPE330 may display blink code 1-2-1-8 on its LEDs. If this occurs, cycle power to the CPU to clear the condition.
Loss of IO Modules in Expansion Rack	DE2336	Rarely, IO modules in an expansion rack may fail to reconfigure if the expansion rack is turned off and back on while the main rack remains powered on. If this occurs, turn the expansion rack off and back on again or, download hardware configuration using PME.
ALG616, ALG626, & ALG628 Terminal Block Present Status Bit	DE2422	IC695ALG616-Fx, IC695ALG626-Fx, and IC695ALG628-Fx (and later hardware revision) analog modules may not set the *terminal block present* status bit in their module status after a CPE330 firmware update completes, even if the terminal block is installed. Normal operation of the *terminal block present* status bit may be restored by performing one of the following operations: removing and reinstalling the terminal block, resetting the analog module using Service Request #24, or power cycling the rack.
Ethernet COMMREQs not always delivered on the first logic sweep	ISS183540	In certain instances where User Logic is of sufficient size and a COMMREQ is issued on first logic sweep, a race condition existing between determination of the CPU Run/Stop state and logic-driven issuance of a COMRREQ which may cause the COMMREQ to be aborted before its transmission is attempted. To the user, it would appear as if the COMMREQ was never issued. The condition is much more observable on COMMREQs issued from the CPU's embedded Ethernet port. To avoid the possibility of encountering this condition, users should avoid issuing COMMREQs on first logic sweep.
PMM335 loss is occasionally detected on power down of the CPU. (Module is not lost on power up.)	ISS182714	The PMM335 monitors power loss, independently of the CPU. The CPE305, CPE310, CPU315, CPU320, CRU320, and CPE330 are fast enough that they can occasionally detect and log the loss of the PMM335 just before the CPU itself powers down. No corrective action is required; This situation can be verified in two ways: (1) by inspecting the timestamp in the loss-of-module report one can correlate it with the power-down event, and (2) by performing a PME Show Status Details report one can see that the PMM335 is present after power up.
Hot Swapping some Analog modules slowly result in modules not being recognized	CR-7365	Occasionally during a hot insertion (hot swap) of IC695 Non-Isolated Analog Input Modules, input channels may take up to 2 seconds to reflect actual input values after the module ok bit is enabled in the module status word. This has only been seen when the hot insertion has been done slowly (i.e. approximately 1.5 seconds to insert the module).
Ethernet Disconnect During Word for Word Change	CR-2234	If the Ethernet connection is broken during a word–for-word change, the programmer may not allow a subsequent word-for-word change after reconnecting due to the fact that it thinks another programmer is currently attached. To correct the issue, go offline and then back online again.

Subject	ID code	Description
Simultaneous Clears, Loads and Stores Not Supported	CR-3118 CR-3300	Currently, PACSystems CPUs do not support multiple programmers changing CPU contents at the same time. The programming software may generate an error during the operation. Simultaneous loads from a single PLC are allowed.
Hardware Configuration Not Equal After Changing Target Name	CR-3181	If the user stores a hardware configuration to flash that sets *Logic/Config Power up Source* to *Always Flash* or *Conditional Flash* and then subsequently changes the name of the target in the programming software, the hardware configuration will go Not Equal and will not Verify as equal.
PLC and IO Fault Tables May Need to be Cleared Twice to Clear Faulted State	CR-3191	Both PLC and IO fault tables may need to be cleared to take the CPU out of Stop/Fault mode. If one of the tables contains a recurring fault, the order in which the tables are cleared may be significant. If the CPU is still in Stop/Fault mode after both tables are cleared, try clearing the fault tables again.
Setting Force On/Off by Storing Initial Value	CR-3317	Once a *Force On* or *Force Off* has been stored to the PLC, the user cannot switch from *Force On* to *Force Off* or vice-versa directly by downloading initial values. The user can turn off the force by doing a download, and then change the *Force On* or *Force Off* by another download.
Second programmer can change logic while in Test & Edit mode	CR-4223	While currently active in a Test and Edit session using Machine Edition on one PC, Machine Edition running on another PC is not prevented from storing new logic to the PLC.
Must Have Logic If Powering-Up From Flash	CR-4633	If the application will configure the CPU to retrieve the contents of flash memory at power-up, be sure to include logic along with hardware configuration when saving to flash memory.
Two loss of module faults for Universal Analog Module	CR-5462	Occasionally, the hot removal of the Universal Analog Input Module (IC695ALG600) results in two *Loss of I/O Module* faults instead of one.
Power up of Series 90-30 HSC module may take as long as 20 seconds	CR-5666	As power is applied to a 90-30 High-Speed Counter, the *module ready* bit in the status bits returned each sweep from the module may not be set for as long as 20 seconds after the first PLC sweep, even though there is no *loss of module* indication. I/O data exchanged with the module is not meaningful until this bit is set by the module. Refer to pages 4-3 to 4-5 of *High Speed Counter Modules for PACSystems* RX3i and Series 90*-30 User's Manual,* GFK-0293D.
Informational fault at power-up	CR-5850	Intermittently during power-up, an Informational non-critical CPU software fault may be generated with fault extra data of 01 91 01 D6. This fault will have no effect on the normal operation of the PLC. But, if the hardware watchdog timer expires after this fault and before power has been cycled again, then the outputs of I/O modules may hold their last state, rather than defaulting to zero.
Extended Memory Types for IO Triggers	CR-5952 CR-6319	%R, %W and %M cannot be used as IO triggers.
Possible PME inability to connect	CR-6067	Infrequently, an attempt to connect a programmer to a PLC via Ethernet will be unsuccessful. The normal connection retry dialog will not be displayed. Rebooting the computer that is running the programmer will resolve the behavior.
GBC30 may not resume operation after power cycle	CR-6167	In rare instances, a GBC30 in an expansion rack may not resume normal operation after a power cycle of either the expansion rack or the main rack.

Subject	ID code	Description
Configuration of 3rd Party Modules	CR-6207	When configuring a 3rd Party Module in PME, a non-zero reference length must be assigned to at least one reference type. For example, assign eight bits of %I. Do not specify a length of zero for all reference types since this will cause the module to not function properly in the system.
Power supply status after power cycling	CR-6294	Rarely, turning a power supply on or off may not result in an add or loss fault. Also, the slot will appear empty in the programmer's online status detail view. The power supply continues to operate normally. Power cycle to restore normal status reporting.
Don't use multiple targets	CR-6450	In a system in which the hardware configuration is stored from one target and logic is stored from a different target, powering-up from flash will not work. The observed behavior is that, following a power up from flash, PME reports hardware configuration and logic *not equal*.
Missing *Loss of terminal block* fault	CR-6526	The IC695ALG600/608/616 analog input modules do not produce a *Loss of terminal block* fault when hardware configuration is stored or the module is hot-inserted, and the terminal block is not locked into place.
Sequence Store Failure	CR-6586 ISS176888	When downloading projects with very large hardware configuration or which use large amounts of user memory, it is possible to encounter a *PLC Sequence Store Failure* error when writing the project to flash. To work around this error, either or both of the following actions may be helpful: 1. Perform an explicit clear of flash prior to performing the write. 2. Increase the operation timeout used by PME prior to performing the write. This is done by expanding the Additional Configuration in the Inspector window for the target controller, and adjusting the Request Timeout. The timeout may need to be increased to as much as 60000 ms, depending on the amount of memory used and the condition of the flash memory.
IC695ALG600 Lead Resistance Compensation setting	CR-6689	A configuration store operation will fail if a channel is configured for 3-wire RTD and Lead Resistance Compensation is set to Disabled. A Loss of Module fault will be logged in the I/O Fault table at the end of the store operation. To recover the lost module, the configuration must be changed to enable Lead Resistance Compensation and module must be power cycled.
C Toolkit PlcMemCopy Documentation Incorrect	CR-7082	This routine does allow the destination and source pointers to be outside of reference memory. If the destination points to discrete reference memory, overrides and transitions will be honored. Note that the header for PlcMemCopy has been updated in Release 3.50 of the C toolkit.
Logic and HWC not equal after power cycle	ISS168431	If the Hardware Config from Target 1, with Logic/Configuration Power-up Source and Data Source both set to *Always from Flash*, is stored in Flash, then Logic and Hardware Config from Target 2, with Logic/Configuration Power-up Source both set to *Always from RAM*, are stored to RAM and there is a good battery, then when power is cycled the programmer may show that Logic and Hardware Config are not equal. The remedy is to clear Flash and re-store the Logic and Hardware Config from Target 2.
Multiple Log Events	CR-2014	The Ethernet Interface sometimes generates multiple exception log events and PLC Fault Table entries when a single error condition occurs. Under repetitive error conditions, the exception log and/or PLC Fault Table can be completely filled with repetitive error messages.

Subject	ID code	Description
Spurious Ethernet Fault	CR-4104	In rare instances, after power cycle, the Ethernet Interface may log the following fault, Event = 28H, Entry 2 = 000eH. This fault can be safely ignored.
Clear of large hardware configurations may cause log event 08/20	CR-6577	A Log event 08/20 may occur when very large hardware configurations are cleared and transfers are active on other Server connections. This log event can be safely ignored.
PLC response timeout errors (8/08) in Ethernet exception log under extremely heavy SRTP traffic	ISS010006	Under extremely heavy SRTP traffic conditions, the Ethernet Interface may log an event in the Ethernet exception log (Event 8, Entry 2 = 08H) indicating an overload condition. This error terminates the SRTP connection. If this event appears, either the traffic load should be reduced, or the application should use an alternate communications method to verify that critical data transfers were not lost due to the overload.
SRTP channel transfers may take up to 20 seconds after power cycle	ISS155214	When SRTP communications are interrupted by a power cycle, the Ethernet interface may require up to 20 seconds to reestablish TCP connection used for SRTP communications.
Intermittent Ethernet log event 8H/15H after power cycle	ISS163056	When starting after a power cycle, the Ethernet Interface may intermittently log an exception (entry 8H, Entry 2 = 15H, Entry 3 = 0000H, Entry 4 = 00aaH). This exception is benign and may be ignored.
RDSD upload / unintended OEM protection lock	ISS182099	When an OEM key is set in a controller, and the controller is unlocked, if an RDSD upload is performed, in rare occasions OEM protection will be unintentionally locked after the upload completes. To recover, enter OEM password to unlock the project, then clear the user memory and flash memory.

Operational Notes

<table>
<tr><th>Subject</th><th>Description</th></tr>
<tr><td>Default IP Addresses for CPE330 Embedded Ethernet</td><td>Initial Ethernet communication with the CPE330 may be accomplished using the default IP Addresses programmed at the factory:

<table>
<tr><th></th><th><u>LAN1 (Top Ethernet Port)</u></th><th><u>LAN2 (Bottom Two Ethernet Ports)</u></th></tr>
<tr><td>IP Address:</td><td>192.168.0.100</td><td>10.10.0.100</td></tr>
<tr><td>Subnet Mask:</td><td>255.255.255.0</td><td>255.255.255.0</td></tr>
<tr><td>Gateway:</td><td>0.0.0.0</td><td>0.0.0.0</td></tr>
</table></td></tr>
<tr><td>Connecting to CPE330 Embedded Ethernet when IP Addresses are not Known</td><td>If the IP Addresses of the CPE330 embedded LAN1 and LAN2 Ethernet interfaces are not known, communication may be established using these methods to set new IP Addresses:
• Set a temporary IP Address using the Set Temporary IP Address utility in Proficy Machine Edition. (PME) After setting the temporary address, connect to the CPE330 using PME and download a new hardware configuration with the desired permanent IP Addresses. (The IP Address set by the Set Temporary IP Address utility is temporary and is reset to match the stored configuration after a power cycle. After using the utility, a permanent IP Address must be set by storing a hardware configuration.)
• Connect to the CPE330 with PME using an IC695ETM001 module with a known IP Address. Download a new hardware configuration with the desired IP Addresses for the CPE330 embedded Ethernet interfaces.</td></tr>
</table>

Subject	Description
***Set Temporary IP Address* Utility Limitations**	These limitations apply when using the *Set Temporary IP Address* utility in Proficy Machine Edition (PME) with the CPE330. Refer to PME's help for a complete list of limitations: • The Set IP utility supports communication through network switches and hubs. Communication through routers is not supported. • The current user logged on the development computer must have full administrator privileges and PME must be run as an administrator. • The target controller must be located on the development computer's local subnet, as specified by the computer's subnet mask and the IP address of the computer and controller. • The Set IP utility does not always work on Windows 7 SP1. Refer to PME's help for possible work-arounds. • The Set IP utility is not compatible with USB to Ethernet adapters.
Ethernet Event Log Not Preserved Across Power Cycle	The CPE330 Ethernet event log for its embedded Ethernet interfaces is not maintained across a power-cycle. Ethernet log events will be reported in the PLC Fault Table as with other RX3i CPUs. The PLC Fault Table entries will be preserved if an energy pack is attached.
Station Manager Commands	The embedded Ethernet interfaces of the CPE330 support a subset of Station Manager Commands (monitor only commands). Refer to *PACSystems TCP/IP Ethernet Communications Station Manager Manual,* GFK-2225, for details.
Programmer Display of Module Information	The functionality to display module status in Proficy™ Machine Edition Logic Developer will show *5CPE330A* when the CPE330 is configured as a CPU320.
RDSD / Programmer Interaction	When using RDSD, all Proficy™ Machine Edition Logic Developer PLC connections must be in the *Offline* state for the RDSD to function properly.
RDSD OEM / Password Protection of Former Uploads Incorrectly Maintained	When deleting an OEM key from a project, you must remove the Energy Pack and cycle power before writing to the RDSD. If this procedure is not followed there are rare occasions where the OEM key that had been deleted may be restored on the RDSD device and therefore could be unexpectedly downloaded to the CPU on a subsequent RDSD download.
Extra Option Module Fault after Downloading CPU320 Configuration to CPE330	An *Extra Option Module* fault is logged in the Controller Fault Table after downloading a CPU320 configuration to a CPE330. This indicates that the Embedded Ethernet interface did not receive a configuration. This fault is expected and does not interfere with normal controller operation.
CPE330 Power-up Time	The CPE330 requires more time to power up than the CPU320: • When an IC695ACC402 Energy Pack is not connected, the CPE330 requires approximately 30 seconds to complete power-up. The CPU OK, RUN, and OUT EN LEDs remain off for up to 30 seconds after power is applied. • When an energy pack is connected, the CPE330 requires up to 90 seconds to complete power up. The power up sequence of the CPE330 begins after the energy pack is fully charged. Charging may require up to 60 seconds depending on the capacitor pack's initial charge. (The energy pack's STAT LED blinks green while it is charging and turns solid green when charging is complete.)
Hot swap of Cap Pack during firmware update results in RXi controller fatal indication (i.e., blink code)	Insertion or removal of the Energy Pack Cap Pack during an Energy Pack firmware update will cause the CPE330 to become non-responsive. In order to recover from this condition user must cycle power to the CPE330. The CPE330 controller will enter a fatal blink trap with code 0x2825.
Insertion of Cap Pack during controller power-up could cause failed battery fault	If the Energy Pack is powered on without a Cap Pack and a Cap Pack is then inserted during power-up of the CPE330, the CPE330 could log a failed battery fault. The CPE330 expects the Energy Pack to report fully charged within a certain amount of time. This time limit may not be met if the Cap Pack is absent at power up.

Subject	Description
Avoid Overlapping IP Subnets when Configuring CPE330 IP Address and Subnet Mask	The CPE330 contains two LAN interfaces, each one supporting a unique IP Address. Care must be taken when assigning IP Addresses and subnet masks to each LAN so that an overlapping IP subnet is not created. Intermittent or no Ethernet communication may result if an overlapping IP subnet is created and the two interfaces are NOT connected (cabled) to the same physical network. By default PME prohibits configuring both LAN interfaces on an overlapping IP subnet. (This may be changed by going to Controller General Options and changing the *CPE330 – LAN1, LAN2 On Same Subnet* to *Show as Warning*.)
Avoid Overlapping Remote IP Networks when Configuring CPE330 IP Address and Subnet Mask	The CPE330 network interface behaves like a single ETM001 with two LANs / IP Addresses. (It is a multi-homed device.) Care must be taken when assigning IP Addresses and subnet masks to each LAN so that each network does not overlap any remote subnets in the network infrastructure. Intermittent or no Ethernet communication may result if the local networks on the CPE330 overlap a remote subnet.
CPE330 Ethernet Gateway Operation	The CPE330 allows configuration of an Ethernet gateway on both LAN1 and LAN2. Since the CPE330 contains two LAN interfaces, each one supporting a unique IP Address, only one gateway is active at a time: • If a gateway is configured on only one of the two LAN interfaces and the other is not configured (0.0.0.0) then, the single gateway is shared by both interfaces. • If a gateway is configured on both LAN interfaces, then the LAN1 gateway is given priority over the LAN2 gateway as long as LAN1 is functional. If, for example, the LAN1 cable is disconnected then the CPE330 will use the LAN2 gateway as a backup.
LAN1 and LAN2 LED Network Speed Indicators	The LAN1 and LAN2 network speed indication LEDs embedded in the RJ-45 Ethernet ports of the CPE330 use different colors to indicate 1 Gbps data rate. The LAN1 LED is Amber to indicate a data rate of 1 Gbps; the LAN2 LED is Green.
CPE330 Embedded Ethernet Protocols & Performance	The CPE330 has two independent Ethernet LANs with three auto-negotiating, full-duplex 10/100/1000 Ethernet Ports which allow support of two IP Addresses and the following protocols: • OPC UA Server with support for up to 5 sessions, 7 subscriptions per session, and up to 12,500 variables • SRTP Server with support for up to 48 simultaneous connections • Modbus/TCP Server with support for up to 16 simultaneous server connections • SRTP and Modbus/TCP Client with support for up to 32 clients; each may be SRTP or Modbus/TCP • Ethernet Global Data (EGD) Class 1 Embedded Ethernet communication is managed by a dedicated processor core. Applications using Ethernet communication should be validated to ensure adequate throughput is available to meet the needs of the application. Additional IC695ETM001 Ethernet modules may be added to the system if additional throughput is required.
CPE330 Multicast EGD Exchange Operation: Double Consumption Possibility	In the event that LAN1 and LAN2 are physically connected to the same Ethernet network, then any multicast EGD consumer exchanges may be consumed twice if both CPE330 LAN interfaces use the same multicast IP addresses. This double consumption occurs because the CPE330 has two LAN interfaces and it is possible for the CPU to receive duplicate multicast packets (one from each interface) and consume both. If this occurs, issuing a *stat g* station manager command shows that the multicast consumer exchange updates twice as fast as the producer sends it. To avoid this issue, connect the LAN1 and LAN2 to physically separate Ethernet networks (i.e. no Ethernet switches in common).

The following apply generically to any RX3i CPU:

Subject	Description
SRTP or Modbus Channel COMMREQ Error Response with Gateway	SRTP & Modbus TCP Channel commands on RX3i CPUs with embedded Ethernet (IC695CPE3xx) and the IC695ETM001 RX3i Ethernet module provide different COMMREQ error codes whenever a request is sent to an unreachable server. When an Ethernet gateway is configured, the COMMREQ returns error code 0290H; when a gateway is not configured, the COMMREQ returns error code AA90H.
Cannot Clear Controller Passwords Loaded in Flash	WARNING: Passwords loaded to Flash (including OEM Password) cannot be cleared using clear Flash or by downloading new firmware. Users MUST document the password as it is not possible for the user to restore a unit to the default, no passwords condition (NULL).
OEM Protection not enforced on power-up from User Flash unless engaged before power cycle.	The OEM Protection Lock must be explicitly set before power down in order to ensure the OEM lock will be set on power-up regardless of the type of security being used.
When passwords are set with Enhanced Security, connecting with PME or establishing SRTP connections can cause a temporary increase in sweep times.	Due to the complex math involved with Enhanced Security authentication, creating SRTP connections and changing privilege levels will take additional sweep time (several milliseconds) not required when passwords are set with legacy security. If consistent sweep time is important to the application, then it is recommended to configure the sweep mode for Constant Sweep. Alternately, Constant Window or a Normal Sweep with both Limited Backplane Window and Limited Controller Comm Windows can be configured. These sweep modes will limit the sweep impact of Enhanced Security authentication and result in authentication processing across multiple sweeps.
C Toolkit Application Compatibility	Beginning with Rel 7.00 of the C Toolkit, writes to %S memory will now fail to compile where in previous releases a compilation warning was issued. This affects use of the GE-supplied C Toolkit macros Sw(), Si(), and Sd().
RUN LED is not illuminated on the Series 90-30 power supply for an RX3i remote/expansion rack with input modules only	For firmware version 6.70 and later, the RUN LED for remote/expansion racks will reflect the current IO enable/disable state (even when there are no output modules in the expansion rack). RUN LED for remote/expansion rack with input modules only will work as follows for All versions prior to version 6.70: When a remote or expansion baseplate is used with the RX3i, the RUN LED on the Series 90-30 power supply for that baseplate is illuminated when the system is in Run mode only if the rack contains at least one output module. If the rack contains input modules only, the RUN LED is not illuminated. This is due to the way input modules are managed in the PACSystems design and does not indicate an error.
Undefined Symbols in C Blocks	In Release 5.00 or later, if an attempt is made to download a C block containing undefined symbols, the download will fail. Machine Edition will display the following message in the Feedback Zone: Error 8097: Controller Error – Controller aborted the request [0x05][0xFF] Prior to Release 5.00, C blocks containing undefined symbols could be successfully downloaded, but if they were executed the CPU would transition to Stop/Halt mode.

Subject **Description**

Slot numbering, power supply placement, CPU placement and reference

1. The A/C Power-Supply (IC695PSA040) for the RX3i is a doublewide module whose connector is left justified as viewed when installed in a rack. It cannot be located in Slot 11 of a 12-slot rack nor Slot 15 of a 16-slot rack. No latch mechanism is provided for the last (right-most) slot in a rack, therefore it is not possible to place the power-supply in the second to last slot.
2. The doublewide RX3i CPUs are modules whose connector is right justified as viewed when installed in a rack. They are referenced for configuration and by user logic applications by the leftmost slot that it occupies. For example, if one of these modules has its physical connector inserted in to slot 4, which means it occupies slots 3 and 4, the CPU is referenced as being located in slot 3. The referenced location of the CPU is not determined by what slot the physical connector is located in, but rather by the left most slot occupied by the entire module.
3. Due to item #2 above, a doublewide RX3i CPU may be located in Slot 0 of a rack (physical connector in Slot 1). In addition the CPU cannot be located in Slot 11 of a 12-slot rack nor Slot 15 of a 16-slot rack, since doing so would require the physical connector to be located in the slot reserved for an expansion module.
4. When migrating a Series 90-30 CPU system to a PACSystems RX3i CPU, be aware that to maintain the Slot 1 location of the CPU, only a singlewide power-supply may be used in Slot 0. Either DC power supply can be used (IC695PSD040 or IC695PSD140). Therefore, if the application using an existing Series 90-30 system must maintain a Slot 1 CPU and uses an AC power-supply, the RX3i system must have the RX3i AC power-supply located in a slot to the right of the RX3i CPU in Slot 1.
5. In deciding to place the CPU in slots other than Slot 1, the user should be aware of the possible application migration issues that could arise. The following lists the areas that could be affected when migrating an application from one CPU slot to another.

Item Affected		How Affected
User Logic	Service Request #15 (*Read Last-Logged Fault Table Entry*)	Location of CPU faults will not be the standard 0.1 location, but will reflect the slot the CPU is located in. User logic that decodes fault table entries retrieved by these service requests may need updating.
	Service Request #20 (*Read Fault Tables*)	
	Communications Request (COMMREQ)	COMMREQs directed to the CPU (e.g. those directed to the serial ports of the CPU) will need to be updated with the correct CPU slot reference.
H/W Configuration	CPU Slot location	Slot location of the CPU must be updated in the HW Configuration to reflect the CPU's true location.
Fault Tables	Faults logged for the CPU	The location of faults logged for the CPU in the fault table will not be the standard 0.1 (rack.slot) location, but will reflect the CPU's actual slot.
External Devices	Series 90 PLCs	
	Remote Series 90 PLCs that use SRTP Channels COMMREQs expect the CPU to be in slot 1. In order to support communications with Series 90 SRTP clients such as Series 90 PLCs using SRTP Channels, the RX3i internally redirects incoming SRTP requests destined for {rack 0, slot 1} to {rack 0, slot 2}, provided that the CPU is located in rack 0 slot 2 (and the remote client has not issued an SRTP Destination service on the connection to discover the rack and slot of the CPU). This special redirection permits Series 90-30 applications that expect the power supply to be located leftmost and the CPU to be located to the right of the power supply to function. Attempts to establish channels with CPUs in slots other than 1 or 2 will fail if initiated from Series 90 PLCs.	
	HMI and External Communication Devices	
	All external communication devices that interact with the CPU should be checked for compatibility with CPU slot locations other than slot 1. Problems may arise with, but are not limited to, initial connection sequences and fault reporting. Machine Edition View customers should select *GE SRTP* as their communications driver – it can communicate with a CPU in any slot.	
	Host Communications Toolkit (HCT)	
	Applications that utilize the Host Communications Toolkit may require updated drivers.	

Subject	Description
LD-PLC operations	Machine Edition LD-PLC no longer supports a function that connects to the PLC, downloads, and then disconnects from the PLC. The connect and download functions are now separate. To perform a download to the PLC, you must first connect to the PLC.
Logic Executed in Row Major instead of Column Major	Logic execution in PACSystems RX3i is performed in row major order (similar to the Series 90-30). This is different from the Series 90-70 that executes in column major order. This means that some complicated rungs may execute slightly differently on PACSystems RX3i and Series 90-70. For specific examples, see the programming software on-line help.
NaN Handled Differently than in S90-30	The PACSystems RX3i CPU may return slightly different values for Not A Number as compared to Series 90-30 CPUs. In these exception cases (e.g., 0.0/0.0), power flow out of the function block is identical to Series 90-30 operation and the computed value is still Not A Number.
PID Algorithm Improved	The PID algorithm used in PACSystems has been improved and therefore PID will function slightly differently on PACSystems RX3i than on the Series 90-30. The differences are that the elapsed time is computed in 100 µS instead of 10 mS units. This smoothes the output characteristic, eliminating periodic adjustments that occurred when the remainder accumulated to 10mS. Also, previous non-linear behavior when the integral gain is changed from some value to 1 repeat/second was eliminated.
Some Service Requests different from 90-30 or no longer supported	• Service Requests 6, 15, and 23 have slightly different parameters. Refer to *PACSystems RX7i & RX3i CPU Programmer's Reference Manual,* GFK-2950. • PACSystems PLCs support Service Request 26/30 functionality via fault locating references. • Service Request 13 requires a valid value in the input parameter block (Refer to *PACSystems RX7i & RX3i CPU Programmer's Reference Manual,* GFK-2950 for details). On the Series 90-30 and Series 90-70 the parameter block value was ignored. • Service Requests 48 and 49 are no longer supported (there is no auto-restart) because most faults can be configured to be *not fatal*.
IL and SFC	IL and SFC are not available.
DO I/O Instruction	The Series 90-30 Enhanced DO I/O instruction is converted to a standard DO I/O instruction (the ALT parameter is discarded and ignored.)
END Instruction	The Series 90-30 END instruction is not supported. Alternate programming techniques should be used.
Non-nested JUMP, LABEL, MCR, & ENDMCR Instructions	Non-nested JUMPs, LABELs, MCRs, & ENDMCRs are translated to the corresponding nested JUMPs, LABELs, MCRs, & ENDMCRs when converting from Series 90-30 to PACSystems RX3i.
Changing IP Address of Ethernet Interface while Connected	Storing a hardware configuration with a new IP Address to the RX3i while connected via Ethernet will succeed, then immediately disconnect because the RX3i is now using a different IP Address than the Programmer. You must enter a new IP Address in the Target Properties in the Machine Edition Inspector window before reconnecting.
Timer Operation	Care should be taken when timers (ONDTR, TMR, and OFDTR) are used in program blocks that are NOT called every sweep. The timers accumulate time across calls to the sub-block unless they are reset. This means that they function like timers operating in a program with a much slower sweep than the timers in the main program block. For program blocks that are inactive for large periods of time, the timers should be programmed in such a manner as to account for this catch up feature. Related to this are timers that are skipped because of the use of the JUMP instruction. Timers that are skipped will NOT catch up and will therefore not accumulate time in the same manner as if they were executed every sweep.

Subject	Description
Constant Sweep	Constant Sweep time, when used, should be set at least 10 ms greater than the normal sweep time to avoid any over-sweep conditions when monitoring or performing on-line changes with the programmer. Window completion faults will occur if the constant sweep setting is not high enough.
Large Number of COMMREQs sent to Module in one sweep Causes Faults	A large number of COMMREQs (typically greater than 8) sent to a given board in the same sweep may cause Module Software faults to be logged in the PLC fault table. The fault group is MOD_OTHR_SOFTWR (16t, 10h) and the error code is COMMREQ_MB_FULL_START (2). When this occurs, the *FT* output of the function block will also be set. To prevent this situation, COMMREQs issued to a given board should be spread across multiple sweeps so that only a limited number (typically 8 or less) of COMMREQs are sent to a given board in each sweep. In addition, the *FT* output parameter should be checked for errors. If the *FT* output is set (meaning an error has been detected), the COMMREQ could be re-issued by the application logic.
C Block Standard Math Functions Do Not Set errno	In C Blocks, standard math functions (e.g. sqrt, pow, asin, acos) do not set errno to the correct value and do not return the correct value if an invalid input is provided.
Hot Swap	Hot Swap of power supplies or CPUs is not supported
Run Mode Store of EGD	RX3i peripheral Ethernet modules (IC695ETM001) must be running firmware version 6.00 or greater to utilize the *Run Mode Store of EGD* feature.
Proper IP Addressing is Always Essential	The PACSystems Ethernet Interface must be configured with the correct IP Address for proper operation in a TCP/IP Ethernet network. Use of incorrect IP Addresses can disrupt network operation for the PACSystems and other nodes on the network. Refer to *PACSystems RX7i & RX3i TCP/IP Ethernet Communications User Manual*, GFK-2224 for important information on IP Addressing. When storing a new HW configuration to the RX3i, be sure that the HW configuration contains the proper Ethernet addressing data (IP Address, Subnet Mask, and Gateway IP Address) for the RX3i. **Note:** Machine Edition programming software maintains the target IP Address (used to connect the programmer to the target) independent of the contents of the HW Configuration for that target). The target IP Address is set in the Target Properties in the Machine Edition Inspector window. Storing a HW Configuration whose Ethernet addressing data contains an IP Address that is different from the RX3i target IP Address will change the IP Address used by the target RX3i as soon as the Store operation is completed; this will break the Programmer connection. Before attempting to reconnect the Programmer, you must change the target IP Address in the *Target Properties* in the Machine Edition *Inspector* window to use the new IP Address. To regain communication at the former IP Address, use the manual corrective action described above. Storing a HW Configuration containing an incorrect Ethernet addressing data to the PACSystems RX3i will result in loss of the Programmer connection and will require manual corrective action as described above.
Network Architecture and Overload	The hub or switch connections in an Ethernet network must form a tree and not a ring; otherwise duplication of packets and network overload may result. In this situation, the RX3i Ethernet modules will continually reset. **Caution** The hub or switch connections in an Ethernet network must form a tree and not a ring; otherwise duplication of packets and network overload may result
Reporting of Duplicate IP Address	The PACSystems RX3i does not log an exception or a fault in the PLC Fault Table when it detects a duplicate IP Address on the network.
SRTP Connections Remain Open after IP Address Changed	The Ethernet Interface does not terminate all open SRTP connections before changing its IP Address. Once the local IP Address has changed, any existing open TCP connections are unable to normally terminate. This can leave SRTP connections open until their underlying TCP connections time out.

Subject	Description
***Send Information Report* (COMMREQ 2010) requests may fail at minimum intervals less than 200 ms from embedded Ethernet port.**	*Send Information Report* COMMREQ requests, with a minimum interval between host accesses of 200 ms or less, may fail if issued from the CPU's embedded Ethernet port. A COMMREQ Status Word value of 0290H, *Period expired before transfer completed; still waiting on transfer* indicates this condition occurred. To work around this issue, the user can set the *minimum interval between host accesses* to a value greater than 200 ms if issuing a *Send Information Report* COMMREQ from the embedded Ethernet port of the CPU.
Modbus/TCP Client Channels require at least a 10 ms delay between bulk channel close and bulk channel open processing	On CPUs with embedded Ethernet ports, a delay of at least 10 ms must occur between logic-driven attempts to close sixteen Modbus/TCP Channels simultaneously and then re-open sixteen Modbus/TCP Channels. This delay is necessary to provide external Modbus/TCP Servers sufficient time to close all channels before the Client issues channel open requests.
Lengthy CPE Backplane Operations	Some exceptionally lengthy CPE backplane operations, such as MC_CamTableSelect, Data Log, and Read Event Queue functions, will take longer to complete compared to other RX3i CPU models, and may delay backplane operations to IC695 modules. For example, when an MC_CamTableSelect function block is executed on the PMM335 module, the CPU's acknowledgement of the PMM355 module interrupt may be delayed. In this situation, you may see the following fault in the I/O Fault Table, even when the interrupt has not been dropped: Error initiating an interrupt to the CPU.
Incorrect COMMREQ Status for Invalid Program Name	The program name for PACSystems is always *LDPROG1*. When another program name is used in a COMMREQ accessing %L memory, an Invalid Block Name (05D5) error is generated.
FANUC I/O Master and Slave operation	Scansets on the master do not work properly for the first operation of the scanset after entering RUN mode. They do work properly for subsequent scans. After downloading a new hardware configuration and logic, a power cycle may be required to resume FANUC I/O operation. Use PLCs of similar performance in FANUC I/O networks. If a master or slave is located in an RX3i system, the other PLCs should be RX3is or Series 90-30 CPU374s. Repeated power up/down cycles of an expansion rack containing FANUC I/O slaves may result in failure of the slaves' operation, with the RDY LED off.
Lost count at power up for Serial IO Processor	The Serial IO Processor (IC693APU305) will lose the first count after every power up or every time the module receives a config
COMMREQ Status Words Declared in Bit Memory Types must be Byte-Aligned	In previous releases, the CPU allowed configuration of COMMREQ Status Words in bit memory types on a non-byte-aligned boundary. Even though the given reference was not byte-aligned, the firmware would adjust it the next-lowest byte boundary before updating status bits, overwriting the bits between the alignment boundary and specified location. To ensure that the application operates as expected, release 3.50 requires configuration of COMMREQ Status Words in bit memory types to be byte-aligned. For example if the user specified status bit location of %I3, the CPU aligns the status bit location at %I1. Release 3.50 firmware requires the user to specify the appropriate aligned address (%I1) to ensure that the utilized location is appropriate for their application. Note that the actual reference location utilized is not changed, but now is explicitly stated for the user.

Subject	Description
STOP and RUN Mode Transition Priority	The PACSystems CPU receives requests to change between stop and run mode from many different sources. These include (but are not limited to) Proficy Machine Edition, HMIs, the user application, and the RUN/STOP switch. Since there are many potential sources for a mode change request, it is possible to receive a new mode change request while another is already in progress. When this scenario occurs, the CPU evaluates the priority of the new mode change request with the mode change that is in progress. If the new mode change request has an equal or higher priority than the one already in progress, the CPU transitions to the new mode instead of the one in progress. If, however, the new mode change request has a lower priority than the one in progress, the new mode request is discarded and the CPU completes the mode change that is in progress. The sweep mode priorities are (listed from highest to lowest priority) STOP HALT, STOP FAULT, STOP, and RUN. (NOTE: The IO ENABLED/DISABLED state is not part of the mode priority evaluation.) For example, a CPU is in RUN IO ENABLED mode and a Service request 13 function block is executed to place the CPU into STOP IO DISABLED mode. Before the transition to STOP IO DISABLED is completed, the RUN/STOP switch is changed from RUN IO ENABLED to RUN IO DISABLED. In this case, the CPU ignores the new request from the RUN/STOP switch to go to RUN IO DISABLED mode because it is already processing a request to go to STOP IO DISABLED mode and STOP mode has a higher priority than RUN mode.
Suspend IO Function Block does not Suspend EGD	In a S90-70 the SUSPEND_IO function block suspends EGD in addition to IO Scan. In PACSystems controllers the SUSPEND IO only suspends IO Scan.
Nuisance Faults Sometimes Logged for Missing Power Supply	If a power supply is missing or has some fault that makes it appear to be missing, the CPU may improperly report (upon download of configuration) more than one fault. Such additional faults may be safely ignored and will not occur in a properly configured rack (with no mismatches or missing modules),
Uploaded Controller Supplemental Files lose date and time	Controller Supplemental Files uploaded from the CPU are time stamped as 8/1/1980 12:08AM regardless of PC or PLC time.

Product Documentation

PACSystems RX3i 1GHz 64MB CPU w/Ethernet IC695CPE330 Quick Start Guide	GFK-2941C
PACSystems RX7i & RX3i CPU Reference Manual	GFK-2222W[3]
PACSystems RX7i & RX3i CPU Programmer's Reference Manual	GFK-2950
PACSystems RX3i System Manual	GFK-2314G
PACSystems RX3i PROFINET IO Controller User Manual	GFK-2571E
PACSystems RXi, RX3i, and RX7i Controller Secure Deployment Guide	GFK-2830D
PACSystems RX7i & RX3i TCP/IP Ethernet Communications User Manual	GFK-2224P[3]
PACSystems TCP/IP Ethernet Communications Station Manager Manual	GFK-2225M[3]
PACSystems HART Pass Through User Manual	GFK-2929

User manuals, product updates and other information sources are available on the GE Intelligent Platforms Support website, http://www.ge-ip.com/support, under *Controllers and IO, RX3i Controllers*.

[3] Will be updated to the indicated version shortly after this product release.